by Messrs. G. and T. Cutler, of London, and the lamps by Mr. T. F. Sarson, of Leicester. The gas is said to be "of the most exquisite purity," and everything else connected with it yields the most extatic satisfaction, as it is meet "the light" *should* do, indeed, to all on whom it shines.——Lord Ward has abandoned, for the present, the idea of leasing the Dudley Castle grounds to the South Stafford Railway Company, as the local feeling is very strong against it. The company, it seems, not only did not mean to infringe on the general privilege of the people as to access, except on fête days; but were prepared to restore and fit up the least dilapidated apartments of the castle in harmony with its general character and aspect, as well as to form a bowling-green and also archery and cricket-grounds on the castle hill, and to secure metropolitan exhibitions of the first order during the season.——The contract for the new reservoir and works of the Wolverhampton Water Works Extension at Goldthorn Hill, has been taken by Messrs. Jones and Treasure, of Liverpool and Newport, contractors. There are to be two reservoirs, to hold each 750,000 gallons; and it is intended to cover them over with brick arches, so that the water shall at all times and seasons remain perfectly bright and pure, as when first pumped out of the natural rock. There are also to be two shafts, 300 feet deep each; and 1,100,000 gallons per diem are to be raised from them before the sinking is declared complete. The contract for the engine, which is to be about 70-horse power, has been taken by the Messrs. Hawthorn, of Newcastle-upon-Tyne, locomotive manufacturers. The whole of the works are to be completed in six months.——The tower of St. Mary's church, Lichfield, is about to be rebuilt, in memory of the late vicar, at a cost of about 1,500*l.*, nearly all of which have been realised.——The rector of the ancient parish church of Birmingham (St. Martin's) has announced that 1,000*l.* will be given by anonymous benefactors on condition that the 6,000*l.* remaining to be raised, in order to *complete* Mr. Hardwick's design for the restoration of the church, should be previously obtained. The committee have accordingly advertised the inhabitants to this effect, but they state that unless the proposed condition be complied with before the 1st day of June next, or the subscribers should be willing to undertake *at first* only a part of the design, the committee will relinquish their undertaking, in duty to those who have already subscribed.——Water was let into the great float at Birkenhead, for the first time on Monday in last week. The greater portion of the masonry work on the Birkenhead side of the float is now completed; and also as much as will be required, for some time to come, on the Wallasey side. The portion of the float now finished comprises a space of about 60 acres. Water to the depth of nearly 20 feet has been admitted. The portion of the great dock now opened extends a little above the Wallasey copper works, where a temporary dam has been built. Beyond this dam, no fewer, we believe, than 1,600 men are now busily employed in forming and excavating the remaining 90 acres of this great undertaking.——According to the *Liverpool Albion* a proposal has been made to amalgamate the Birkenhead with the Liverpool docks. The proposition of the Liverpool Dock Trust is said to comprise the purchase, not only of the docks at Birkenhead, but also of all warehouses, lands, &c. in their vicinity. The amount of valuation and rate of interest on capital are said to be the only questions remaining for negotiation.——The Oldham subscription list for the Peel Testimonial Baths now amounts to upwards of 1,100*l.*, and is favourably progressing. The subscribers are about to be consulted as to a site selected by the committee.——The Blackburn Market-house has been fitted up with a clock, with translucent dial-plate for evening illumination.——At a recent meeting of the Rotherham Gas Company "*the usual* dividend of 10 per cent. was declared, and a sum carried to the surplus fund in addition:" the price is to be further reduced.——Christ Church Southport (Ormskirk), has been enlarged by subscription to accommodate 500 more hearers. One-half of the sittings will be free. The architect is Mr. Thomas Withnell, of Southport, who has planned the greater number of the edifices in their thriving watering place. The additions are north and south transepts, with galleries over. The present nave is lengthened, making room for porches outside to gain access to the galleries. The church, with the present additions, is cruciform. The transepts are about 5 feet higher than the ceiling of the nave. The communion windows are of stained glass.——The contract for building a new Congregational Chapel, in Fawcett-street, Bishop Wearmouth, from a design by Mr. Thomas Oliver, jun., architect, has been let to Messrs. Wilkinson, Heaton, and Foster, builders, at the estimated cost of upwards of 2,000*l.* and the foundation-stone will shortly be laid.——Another prison is being built in Glasgow. It is intended as a penitentiary, and is to be four stories in height. There will be 160 cells.——The contract for building the National Gallery on the Mound, at Edinburgh, has been taken by Mr. David Lind, the builder of the Scott Monument, the Assembly Hall, the British Linen Company's Bank, &c.——The number of students who attended the Glasgow School of Design last year was 870, being ninety-eight more than that of the previous year. The manufacturers are making increased application for designers; nevertheless, it is to be regretted that the local subscriptions have declined, and Government have hence refused to increase their grant: indeed, they could not have been blamed for diminishing it in such circumstances. The receipts last year were 1,330*l.* 10s.; expenditure, 1,157*l.* 2s. 5½*d.* Mr. Robert Harvey has been appointed to the charge of the class for engineering drawing, in room of Mr. Bell, resigned.——There appears to be a good prospect of the proposed new public park at the west end of Glasgow being carried out. The sum of 11,500*l.* will be required for this purpose. A committee has been formed, and a subscription list opened.——"Last week," says a Glasgow paper, "a very large cast-iron bell was cast at Dundyvan Iron works, weighing between two and three tons, and intended for Dent's clock at the Great Exhibition. On trial it was found to possess a magnificent tone, maintaining its sonorous vibration for about three minutes after being struck with a wooden mallet. A small proportion of molten tin was mixed with the fluid iron immediately before casting, which, whilst increasing its musical tone, added to its brittleness; for, on being gently lowered on to a truck whilst in a state of sonorous vibration, it cracked, and is, of course, now useless. The experiment is a curious one, as, we believe, no effort was ever made to found a large bell of cast-iron even with a small admixture of any other metal.——The directors of the Dublin Consumers' Gas Company report that "the board have increased by 2½ per cent. the allowance or deduction usually set apart to cover wear and tear; and they have also deemed it expedient to commence a fund for the gradual reduction of the meter investment; but it is gratifying to the board to state, that after payment of the usual dividend of 3s. 6d. per share or 7 per cent. per annum, there will still remain a sum of 862*l.* 11s. to be added to the surplus fund."

Drains for Lunatic Asylums.—Relative to recent remarks on the material and size of drains, I feel prompted to offer a suggestion that all drains from water-closets in lunatic asylums should (from the soil-pipe to some convenient place for easy inspection) be of a diameter of not less than six or nine inches,—I should say nine. My reason is this, that in all such institutions you will invariably have inmates in the habit of cramming down the closets everything they can lay their hands upon. In several I have had opened lately here (Oulton House Retreat Asylum) were found shoes, pieces of coal, parts of dresses, &c. These, of course, go down the soil-pipes safely enough, but, upon passing into a *small drain*, immediately become the nucleus for an accumulation.—F. B.

THE LATE EXHIBITION OF MODERN ART, PALL-MALL EAST.

The Exhibition which was organised in the gallery of the old Society of Painters in Water Colours, by three or four lovers of art, with the praiseworthy view of providing for the public an exhibition of art during the winter, and giving artists another opportunity to dispose of their works, has just now closed.

The gallery was open exactly twenty weeks, and during that time the number of visitors was 5,617, or an average of 47 per day, independent of the free visitors (546). About 2,000 catalogues were sold and given away. Upwards of *eighty* works were sold, without any cost whatever to the artists.

The cost to the promoters, above the receipts, and independently of the expenditure for frames, a large item, has been very considerable. Several of the artists, hearing this, manifested a warm desire to bear their share of it (we mention it to their credit), but this was of course refused; and we are glad to hear, beyond this, that the promoters, believing that the Exhibition has proved useful, and having received assurances from the artists that they will be better prepared next year, are determined, and have indeed made arrangements, to open again early in August.

INSTITUTION OF CIVIL ENGINEERS.

On the 1st inst. a paper was read "On the Lockwood Viaduct, on the Huddersfield and Sheffield Railway," by Mr. J. Hawkshaw. This viaduct was described as consisting of 32 semi-circular arches, each 30 feet span, one oblique arch of 40 feet span, and another oblique arch 70 feet span, the latter having a versed sine of only 7 feet. The piers were 4 feet 6 inches thick at the springing, and had a batter of one-sixth of an inch to the foot. The total length was 1,428 feet, and the height from the foundations to the top of the parapet was 136 feet.

With the exception of the stone ribs of the flat oblique arch, the string course and the coping, which were of ashlar, the whole structure, piers, arches, and parapet, was built of "snecked rubble masonry," composed of stones of all sizes, both as to length, thickness, and width of bed, laid in a thick bed of stiff mortar; but the beds and joints were roughly scabbled, so as to remove any projections, which might cause the stones to rock, or to act like a wedge on the course beneath, and the beds were laid as nearly horizontal, and the joints as nearly vertical as the nature of the stone would permit. The largest stones were so placed as to form a perfect bond for those of smaller dimensions, a sufficient quantity of "throughs" being also used, and the whole work so built that the workmanship of the inside and outside of the walls was of uniform quality, both as to labour and material. This description of masonry was only about one-half the price of ashlar, and though not, of course, capable of bearing the same incumbent weight as could be supported by solid ashlar, it was considered superior, when carefully executed, to a thin facing of ashlar, with a hearting of rubble, a mode of construction very frequently adopted.

The total cost of this viaduct, including the excavation for the foundations, the scaffolding, the centering, and every other expense connected with its erection was 33,000*l.*, being at the rate of 18s. 7d. per cubic yard of masonry.

The Hall Bottom Viaduct, on the West Riding Union Railway, was another instance of a similar kind of construction, the only difference being that the piers had a greater taper, and to reduce the increased quantity of masonry which this plan involved, flues or hollow spaces were left in the piers, the sides of which followed the line of the face of the pier, so that a uniform thickness of masonry was preserved throughout.

Two other viaducts, likewise designed by the author, but built of a different description of masonry, were also alluded to. The first, the Penistone Viaduct, on the Huddersfield and Sheffield Railway, was constructed of what was termed "block in course" work, which was

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